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GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE
FRANKFORT, KENTUCKY 40601
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LEONARD K. PETERS
SECRETARY

FACT SHEET

**KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE TREATED WASTEWATER
INTO WATERS OF THE COMMONWEALTH**

KPDES No.: KY0033561 Permit Writer: Ronnie Thompson Date: March 27, 2009
AI No.: 11388

1. **SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant

Tennessee Valley Authority
1101 Market Street, LP 3D
Chattanooga, Tennessee 37402

b. Facility Location

Kentucky Hydro Plant
640 Kentucky Dam Road
Grand Rivers, Livingston County, Kentucky

c. Description of Applicant's Operation

Kentucky Hydro Plant is a hydroelectric power plant (SIC Code 4911).

d. Production Capacity of Facility

The facility's five generating units are capable of producing 175 megawatts of electricity.

e. Description of Existing Pollution Abatement Facilities

Outfall 001 - Various combined wastewaters are discharged untreated.

Outfall 002 - Storm water runoff is treated by an oil/water separator and a retention pond.

f. Permitting Action

Reissuance of a minor KPDES permit for an existing source hydroelectric power plant.

2. **RECEIVING WATERS**

a. Stream Name/Location

Outfall 001 - Tennessee River at latitude 37-00-49 and longitude 88-16-09.

Outfall 002 - Tennessee River at latitude 37-01-00 and longitude 88-16-11.

b. Stream Segment Use Classifications

Tennessee River is classified as Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation, Domestic Water Supply and Outstanding State resource Water (OSRW).

c. Stream Segment Categorization

Tennessee River is designated as a High Quality Water pursuant to 401 KAR 10:030, Section 1(3)(a)1.

d. Stream Low Flow Condition

At the point of discharge, the 7Q10 and the Harmonic Mean for Tennessee River are 8,190 cfs and 43,800 cfs, respectively.

At the city of Paducah, Kentucky intake, the nearest downstream public water supply, the 7Q10 and the Harmonic Mean for the Ohio River are 43,300 cfs and 199,000 cfs, respectively.

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3. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 001 - Various combined wastewaters.

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow (mgd)	1.60	6.75	Report	Report	401 KAR 5:065, Section 2(8)
Temperature (°C)	20.8	40.0	Report	Report	401 KAR 5:065, Section 2(8)

The data in the Reported Discharge columns for Flow and Temperature was determined from an analysis of the Discharge Monitoring Reports (DMRs) for the previous permit.

4. **METHODOLOGY USED IN DETERMINING LIMITATIONS**

a. Serial Number

Outfall 001 - Various combined wastewaters, including wastewater from the spillway, intake gallery, wheel pit, air conditioners, air compressors, station sump and noncontact cooling water from the generator surface air unit, lower guide bearings, thrust bearings, turbine guide bearings and draft tube, and strainer backwash at the combined rate of 1.405 mgd.

b. Effluent Characteristics

Flow and Temperature

c. Pertinent Factors

Kentucky Hydro Power Plant consists of a dam, powerhouse, spillway, switchyard and tailrace.

The tailrace is formed by river water as it flows through the turbines.

The powerhouse consists of five (5) generating units with a draft tube, surface air unit, lower guide bearing, thrust bearing and turbine guide bearing, all of which discharge into the tailrace.

d. Monitoring Requirements

Flow shall be estimated once per quarter.

Temperature shall be calculated once per quarter. The monthly average shall be the average of the five units and the daily maximum shall be the maximum for any one unit.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow and Temperature

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(8).

5. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 002 - Storm water runoff.

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow (mgd)	0.2044	0.8466	Report	Report	401 KAR 5:065, Section 2(8)
Total Suspended Solids (mg/l)	5	16	30	60	401 KAR 5:080, Section 1(2)(c)2
Oil & Grease (mg/l)	BDL	BDL	10	15	401 KAR 5:080, Section 1(2)(c)2
pH (standard units)	7.3 (min)	9.0 (max)	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

The data in the Reported Discharge columns for Flow, Total Suspended Solids, Oil & Grease and pH was determined from an analysis of the Discharge Monitoring Reports (DMRs) for the previous permit.

The abbreviation BDL means Below Detectable Limit.

6. **METHODOLOGY USED IN DETERMINING LIMITATIONS**

a. Serial Number

Outfall 002 - Storm water runoff from the power plant switchyard.

b. Effluent Characteristics

Flow, Total Suspended solids, Oil & Grease and pH.

c. Pertinent Factors

None

d. Monitoring Requirements

Flow shall be monitored once per quarter instantaneously.

Total Suspended Solids, Oil & Grease and pH shall be monitored once per quarter by grab sample.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow

The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c)2. The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

7. **ANTIDEGRADATION**

The conditions of 401 KAR 10:029, Section 1 have been satisfied by this permit action. Since this permit action involves reissuance of an existing permit, and does not propose an expanded discharge, a review under 401 KAR 10:030, Section 1 is not applicable.

8. **PROPOSED COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS**

Permittee shall comply with the effluent limitations by the effective date of the permit.

9. **PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE**

Outfall Signage

As a member of ORSANCO (Ohio River Valley Sanitation Commission) the Commonwealth of Kentucky through the Division of Water implements a requirement that the permittee post a permanent marker at each discharge point to the Ohio River. It is the Best Professional Judgment of the Division of Water, 401 KAR 5:080, Section 1(2)(c)2, that all permittees post a marker at all discharge locations and/or monitoring points. The ORSANCO requirements for the marker specify it to be at least 2 feet by 2 feet in size and a minimum of 3 feet above ground level with the Permittee Name and KPDES permit and outfall numbers in 2 inch letters. For internal monitoring points the marker shall be of sufficient size to include the outfall number in 2 inch letters and is to be posted as near as possible to the actual sampling location.

Best Management Practices (BMP) Plan

Pursuant to 401 KAR 5:065, Section 2(10), a BMP requirement shall be included: to control or abate the discharge of pollutants from ancillary areas containing toxic or hazardous substances or those substances which could result in an environmental emergency; where numeric effluent limitations are infeasible; or to carry out the purposes and intent of KRS 224.

Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

10. **PERMIT DURATION**

Five (5) years. This facility is in the Four Rivers, Upper and Lower Cumberland Basin Management Unit as per the Kentucky Watershed Management Framework.

11. **PERMIT INFORMATION**

The application, draft permit fact sheet, public notice, comments received and additional information is available by writing the Division of Water at 200 Fair Oaks Lane, Frankfort, Kentucky 40601.

12. **REFERENCES AND CITED DOCUMENTS**

All material and documents referenced or cited in this fact sheet are a part of the permit information as described above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the person listed below.

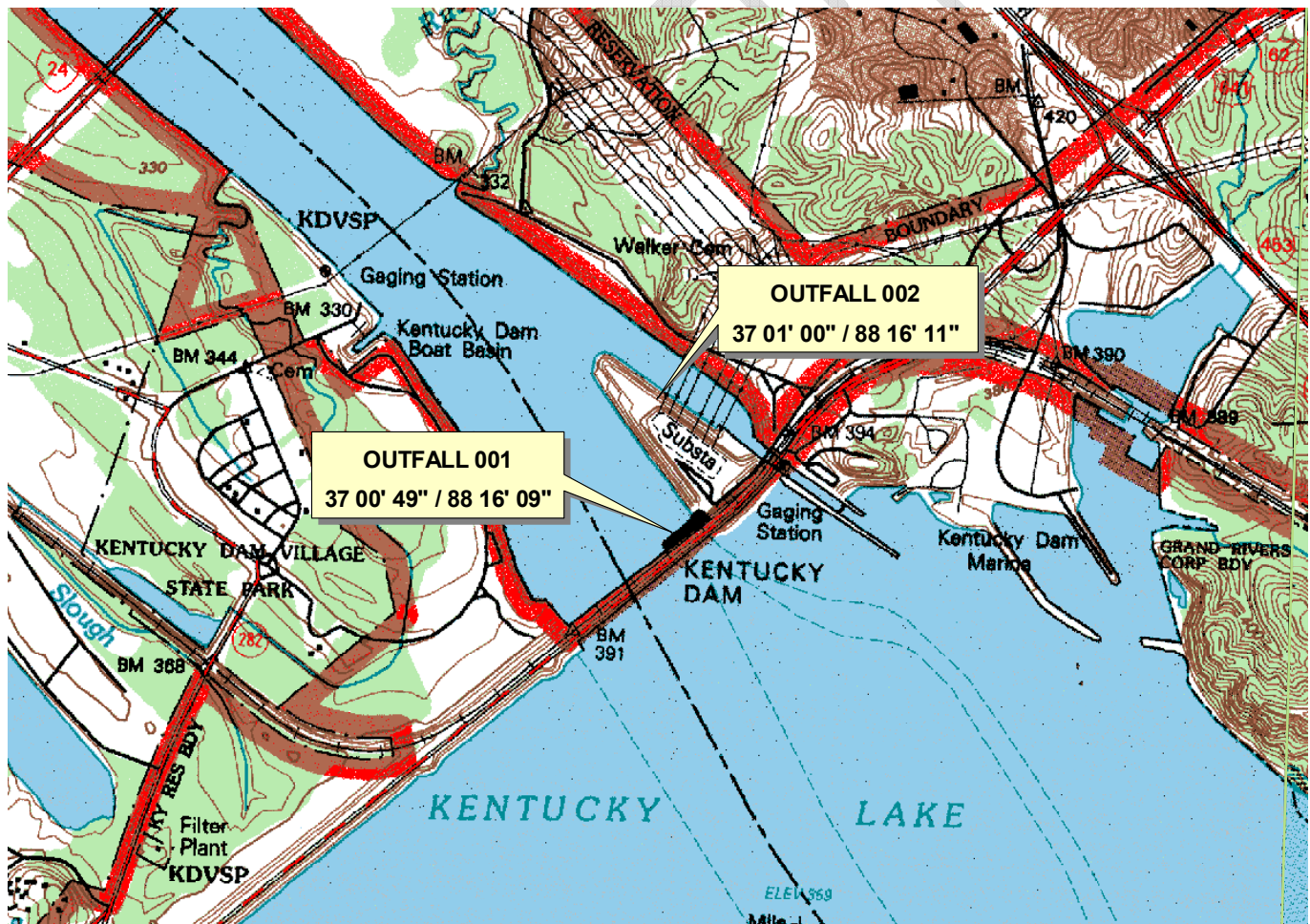
13. **CONTACT**

For further information, contact the individual identified on the Public Notice or the Permit Writer - Ronnie Thompson at (502) 564-8158, extension 4896 or e-mail Ronnie.Thompson@ky.gov.

14. **PUBLIC NOTICE INFORMATION**

Please refer to the attached Public Notice for details regarding the procedures for a final permit decision, deadline for comments, and other information required by 401 KAR 5:075, Section 4(2)(e).

Kentucky Hydro Plant



KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0033561

AI No.: 11388

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Tennessee Valley Authority
1101 Market Street, LP 3D
Chattanooga, Tennessee 37402

is authorized to discharge from a facility located at

Kentucky Hydro Plant
640 Kentucky Dam Road
Grand Rivers, Livingston County, Kentucky

to receiving waters named

Outfall 001 - Tennessee River at latitude 37-00-49 and longitude 88-16-09.

Outfall 002 - Tennessee River at latitude 37-01-00 and longitude 88-16-11.

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in PARTS I, II, III and IV hereof. The permit consists of this cover sheet, PART I 3 pages, PART II 1 page, PART III 2 pages and PART IV 3 pages.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Date Signed

Sandra L. Gruzesky, Director
Division of Water

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 001 - Various combined wastewaters.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	(lbs/day) Monthly Avg.	Daily Max.	Other Units (Specify) Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (mgd)	Report	Report	N/A	N/A	1/Quarter	Estimated
Temperature (°C)	N/A	N/A	Report	Report	1/Quarter	Calculated

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location:

Flow shall be estimated at the nearest accessible point along the tailrace after mixing of all wastewaters.

Temperature shall be calculated from the temperature readings for each unit. The monthly average shall be the average of the five units and the daily maximum shall be the maximum for any individual unit.

The abbreviation N/A means Not Applicable.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 002 - Storm water runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>				<u>MONITORING REQUIREMENTS</u>	
	(lbs/day)	Other Units(Specify)				
	Monthly	Daily	Monthly	Daily	Measurement	Sample
	<u>Avg.</u>	<u>Max.</u>	<u>Avg.</u>	<u>Max.</u>	<u>Frequency</u>	<u>Type</u>
Flow (mgd)	Report	Report	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	N/A	N/A	30 mg/l	60 mg/l	1/Quarter	Grab
Oil & Grease	N/A	N/A	10 mg/l	15 mg/l	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Quarter by grab sample.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge or to mixing with the receiving waters or waste streams from other outfalls.

The abbreviation N/A means Not Applicable.

B. Schedule of Compliance

The permittee shall achieve compliance with all requirements on the effective date of this permit.

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STANDARD CONDITIONS FOR KPDES PERMIT

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water
Paducah Regional Office
130 Eagle Nest Drive
Paducah, Kentucky 42003
ATTN: Supervisor

Energy and Environment Cabinet
Dept. for Environmental Protection
Division of Water/Surface Water Permits Branch
200 Fair Oaks Lane
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:086, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

C. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

D. Outfall Signage

The permittee shall post a permanent marker at all discharge locations and/or monitoring points. The marker shall be at least 2 feet by 2 feet in size and a minimum of 3 feet above ground level with the Permittee Name and KPDES permit and outfall numbers in 2 inch letters. For internal monitoring points the marker shall be of sufficient size to include the outfall number in 2 inch letters and shall be posted as near as possible to the actual sampling location.

PART IV

BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3. Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals, the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

4. General Requirements

The BMP plan shall:

- a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.
- b. Establish specific objectives for the control of toxic and hazardous pollutants.
 - (1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

- (2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

- c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."
- d. Include any special conditions established in part b of this section.
- e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

- a. BMP Committee
- b. Reporting of BMP Incidents
- c. Risk Identification and Assessment
- d. Employee Training
- e. Inspections and Records
- f. Preventive Maintenance
- g. Good Housekeeping
- h. Materials Compatibility
- i. Security
- j. Materials Inventory

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to NREPC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3:

Division of Water
Paducah Regional Office
130 Eagle Nest Drive
Paducah, Kentucky 42003
ATTN: Supervisor

Energy and Environment Cabinet
Dept. for Environmental Protection
Division of Water/Surface Water Permits Branch
200 Fair Oaks Lane
Frankfort, Kentucky 40601

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

SECTION B. SPECIFIC CONDITIONS

Periodically Discharged Wastewaters Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.